Lyme Disease Surveillance Report -- Vermont 2013

VERMONT
DEPARTMENT OF HEALTH

This update includes Lyme disease data reported to the Vermont Department of Health (VDH) in 2013. Lyme disease is a nationally notifiable condition and data referenced in this update are based on reports received from healthcare providers and clinical laboratories.

Introduction

Background

Lyme disease is caused by infection with the bacterium, *Borrelia burgdorferi.* In the eastern United States, Lyme disease is transmitted by the black-legged tick, *Ixodes scapularis*, commonly known as the deer tick. Some of the common symptoms of Lyme disease include skin rash, swollen joints and flu-like symptoms such as fatigue, fever, sweats, chills and headache. Lyme disease can also affect the heart and nervous system. Although patients with Lyme disease can be completely cured by antibiotics, the goal is to prevent infection by preventing tick bites.

Current Status in Vermont

Lyme disease was first recognized in the U. S. in 1975 when it was implicated in a mysterious cluster of juvenile arthritis cases in Lyme, Connecticut. Since then, Lyme disease has become the most commonly reported vector-borne disease in the US, with prevalence rates highest in New England and the Upper Midwest.

Prior to 2005, a small number of cases of Lyme disease were reported to VDH. Since 2005, the number of cases has steadily increased. The number of cases reported climbed from 105 cases in 2006 to 522 cases in 2012. In 2013, the number of cases increased to 893 cases.

Figure 1: Total number of Lyme disease reports, Vermont 2013

Case Status	Cases (#)	Percentage (%)
Confirmed	674	51.0
Probable	219	16.5
Suspect	197	15.0
Not a case	231	17.5
Total	**1321**	**100**

Box: 2013 Lyme disease, case summary

1) **Case Total: 893**

   Confirmed: 674

   Probable: 219

2) **Incidence Rate:**
   - **Confirmed cases: 108 cases per 100,000 people**
   - **Confirmed and Probable cases: 143 cases per 100,000 people**

3) **Gender:**

   Male: Confirmed – 383

   Probable – 126

   Female: Confirmed – 291

   Probable: 93

4) **Age:**

   Confirmed: 2- 94 years
   - **Average: 44**

   Probable: 2 – 92 years
   - **Average: 49**

5) **Place of Exposure**

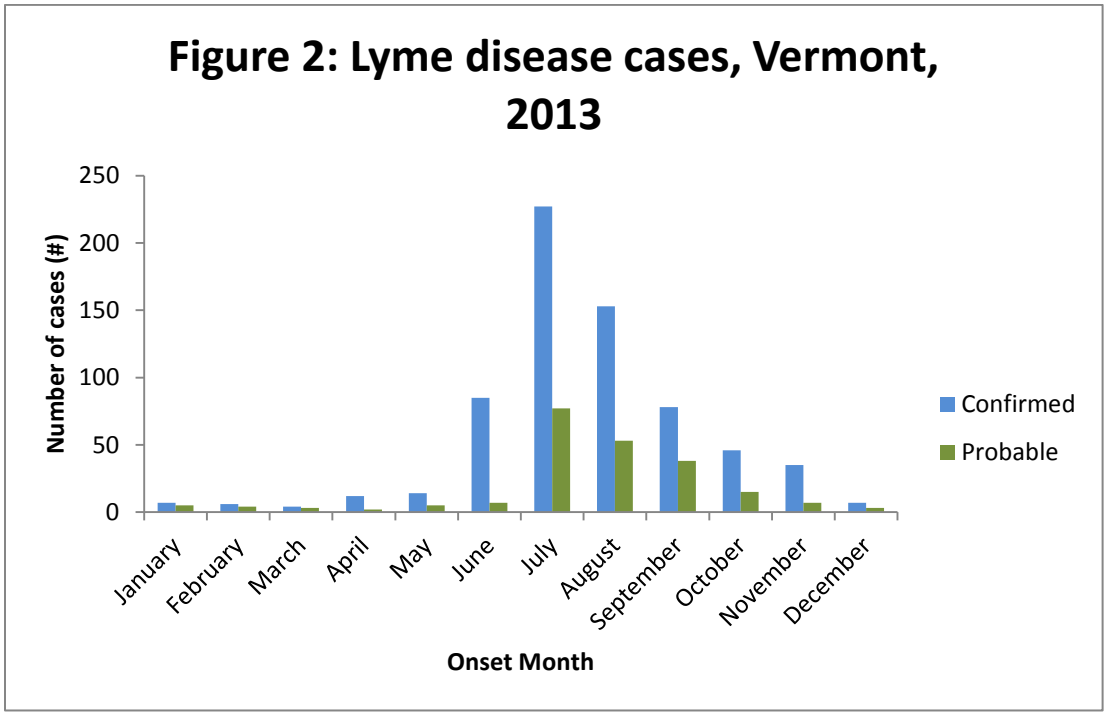
	Confirmed	Probable
In-State:	**526**	**165**
Out-of-State:	**27**	**10**
Unknown:	**115**	**42**

Limitations for 2013 Lyme disease data

Disease surveillance systems can be inexact because of disease under-reporting and misclassification. Every case of Lyme disease is not reported to the state, and some cases that are reported may be due to another cause. Surveillance data are based on the health department's abilities to capture and classify cases, and may vary between counties and years.

2013 Lyme disease: Seasonality

Transmission of *Borrelia burgdorferi* is largely dependent upon the blacklegged tick's ability to locate and feed upon competent host animals, which results in a distinct seasonality of infection. Most human cases occur during the peak periods of nymphal host-seeking behavior in late spring through early fall **[Figure 2]**. In 2013, 80% of confirmed and probable cases occurred between June and September. The majority of cases had onsets in July and August.



2013 Lyme disease: Cases by age and gender

Lyme disease can affect people of all ages, but it is most commonly diagnosed in children and middle-aged to older adults. In Vermont, 43.2% of the reported confirmed cases were females and 56.8% of cases were males. Of the reported probable cases, 42.5% were females and 57.5% were males **[Figures 3 and 4]**.

Figure 3: Confirmed cases of Lyme disease by age and gender, Vermont, 2013

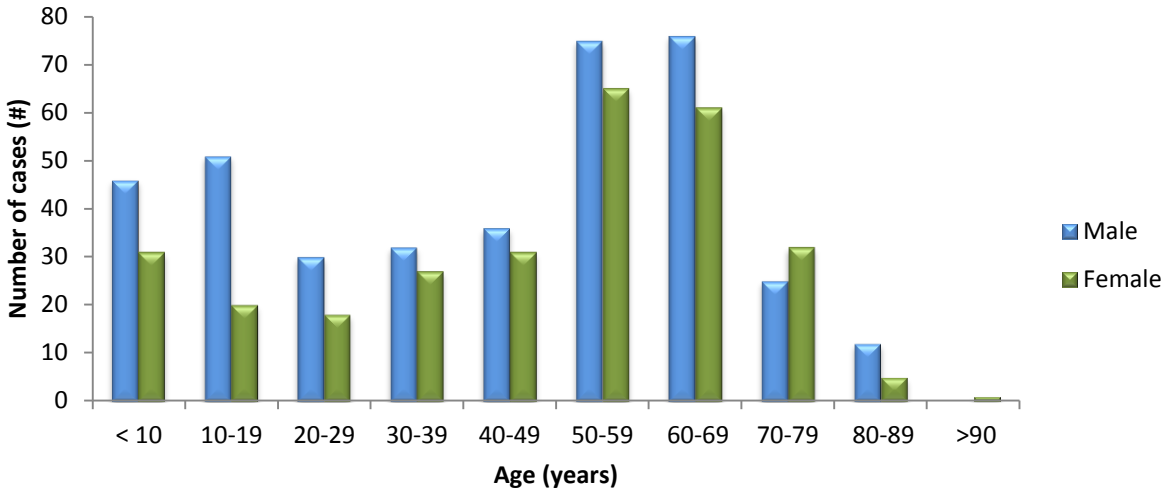
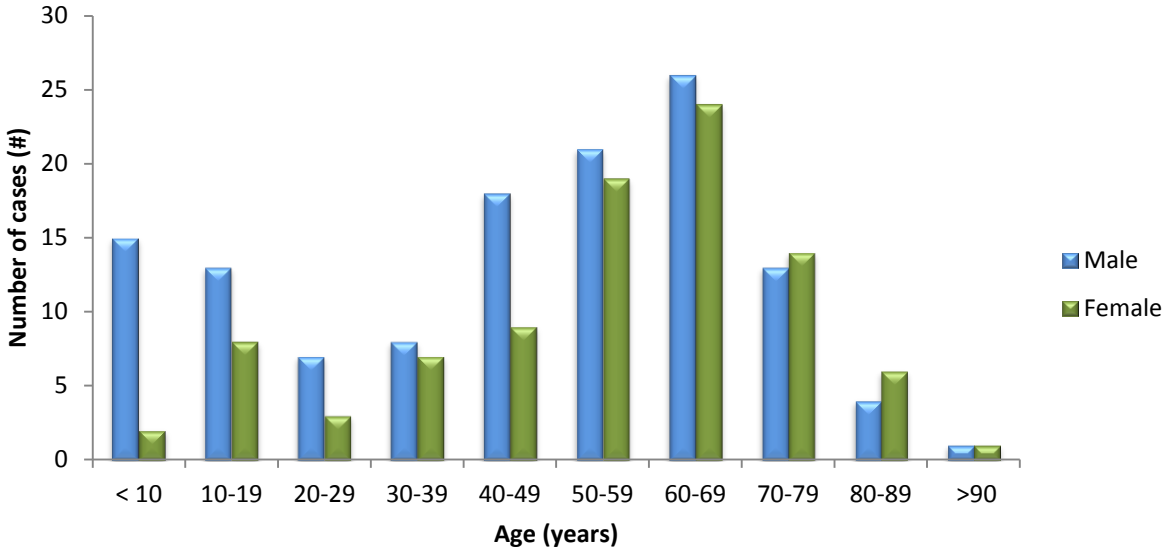


Figure 4: Probable cases of Lyme disease by age and gender, Vermont, 2013



2013 Lyme disease: Reported Symptoms

The symptom that is most commonly associated with Lyme disease is the erythema migrans (EM) rash, which occurs in 60%-80% of people infected with *B. burgdorferi*. In 2013, 74.2% of all confirmed cases of Lyme disease in Vermont reported an EM rash as a major symptom of infection.**[Table 1].**

Table 1: Erythemia migrans (EM) presence in confirmed cases, Vermont, 2013

Age	Total no. of cases (#)	EM present (#)	EM present (%)
≤ 18	141	99	70.2
Adults	533	401	75.2
Total	**674**	**500**	**74.2**

In addition to causing an EM rash, Lyme disease may affect the heart, nerves and musculoskeletal system. The second most common reported symptom is swelling of the joints (arthritis, approximately 30% among children and 28.5% among adults), followed by temporary facial weakness or paralysis (Bells palsy, 9.2% among children and 8.4% among adults), and nerve dysfunction (radiculoneuropathy, 0.7% among children and approximately 3% among adults). **[Figures 5 and 6; Table 2 and Table 3**].

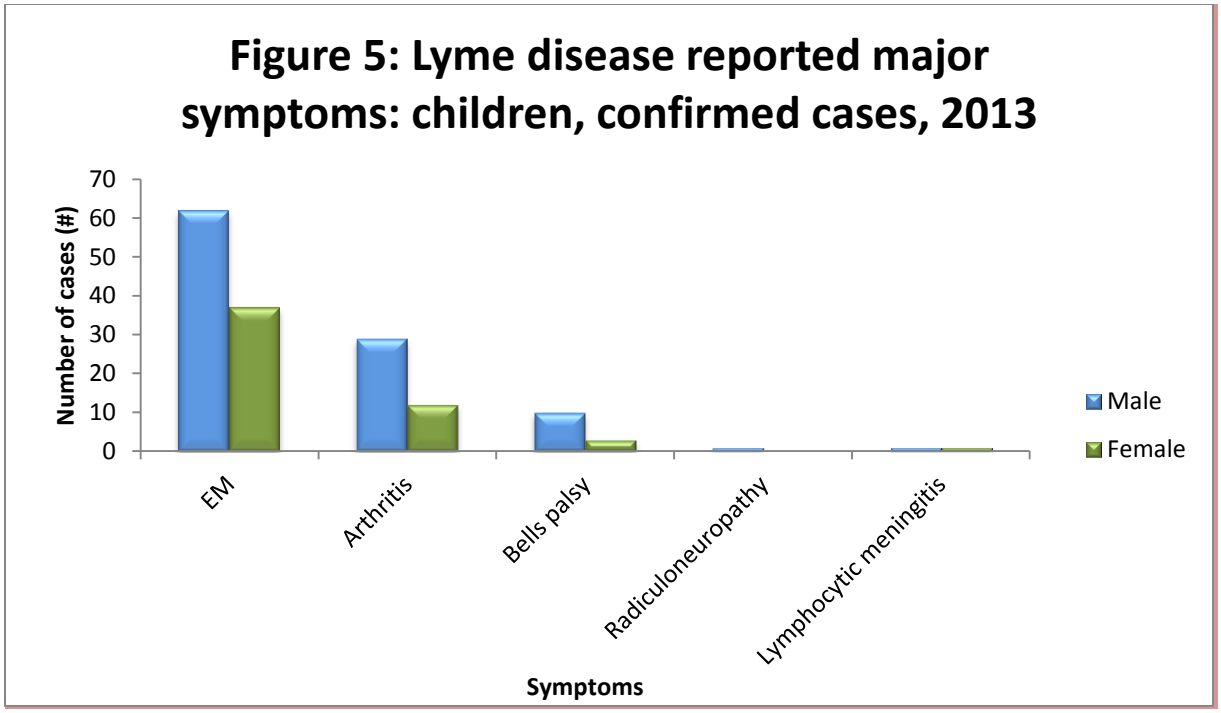


Table 2: Reported major symptoms among children in confirmed cases, Vermont, 2013

	Symptom		Gender	
Children	Cases (#)	Cases (%)	Female	Male
EM	99	70.2	37	62
Arthritis	41	29.1	12	29
Bells palsy	13	9.2	3	10
Radiculoneuropathy	1	0.7	0	1
Lymphocytic meningitis	2	1.5	1	1

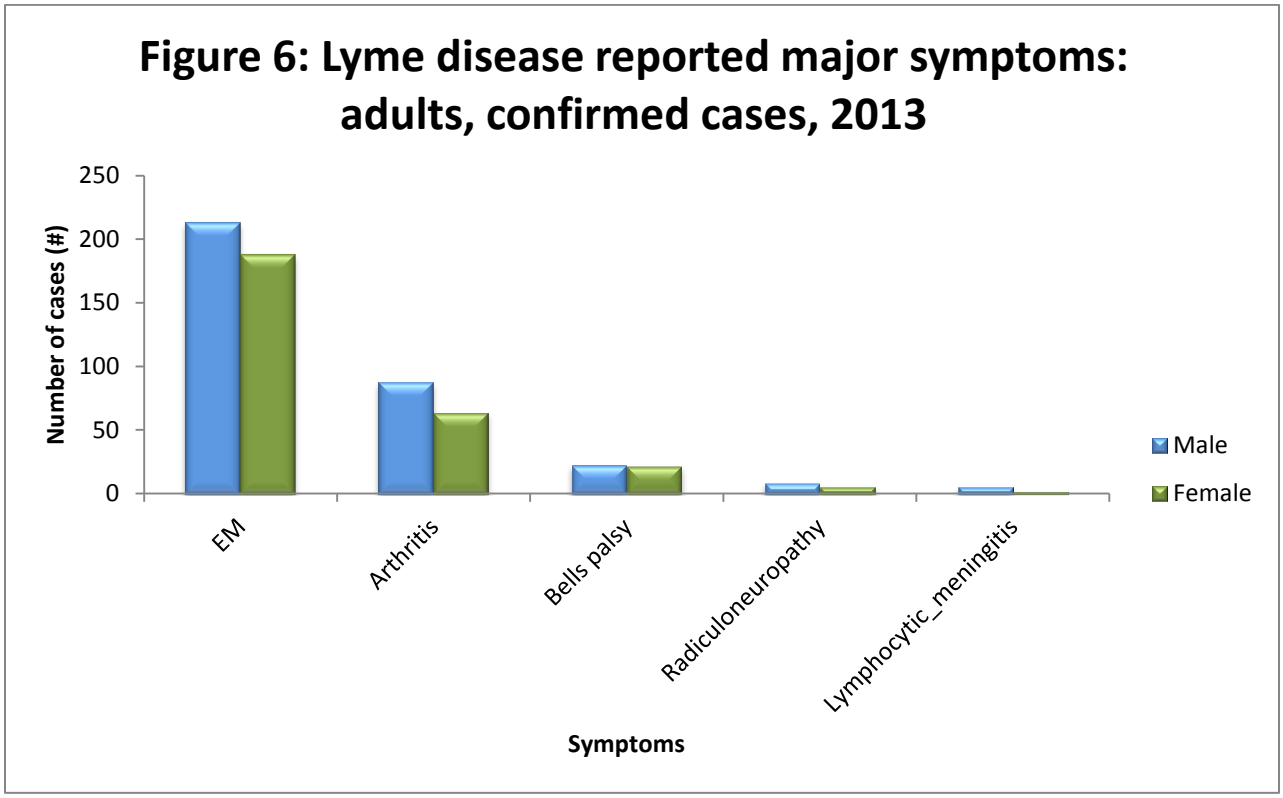
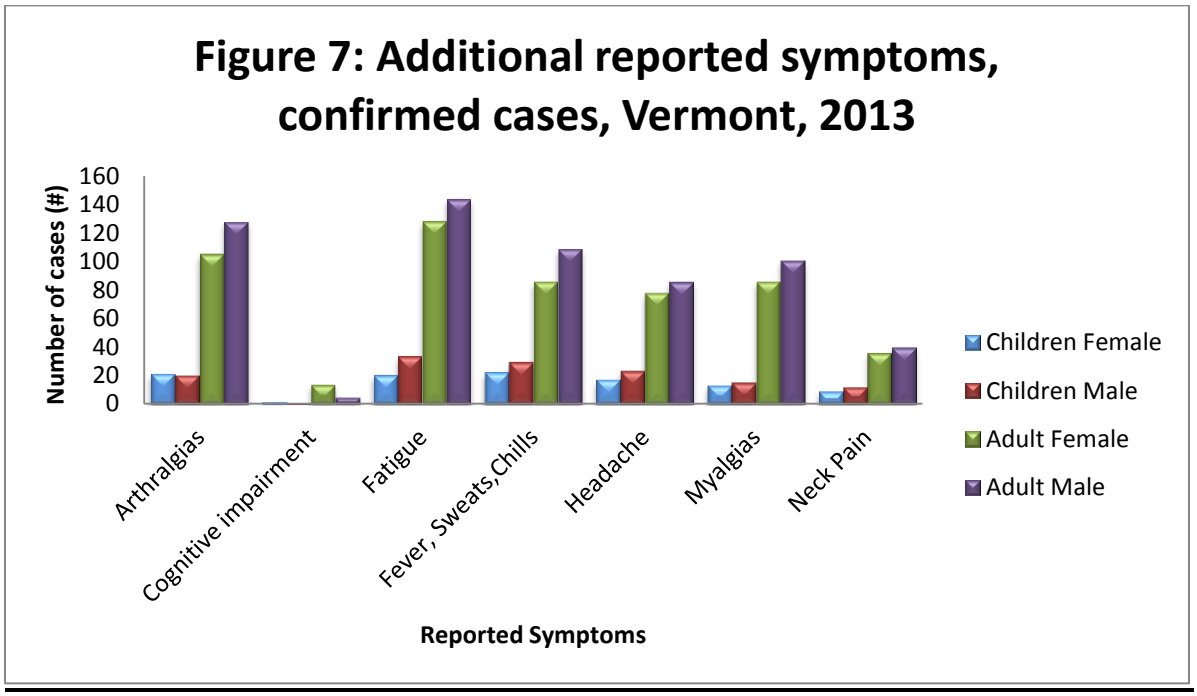


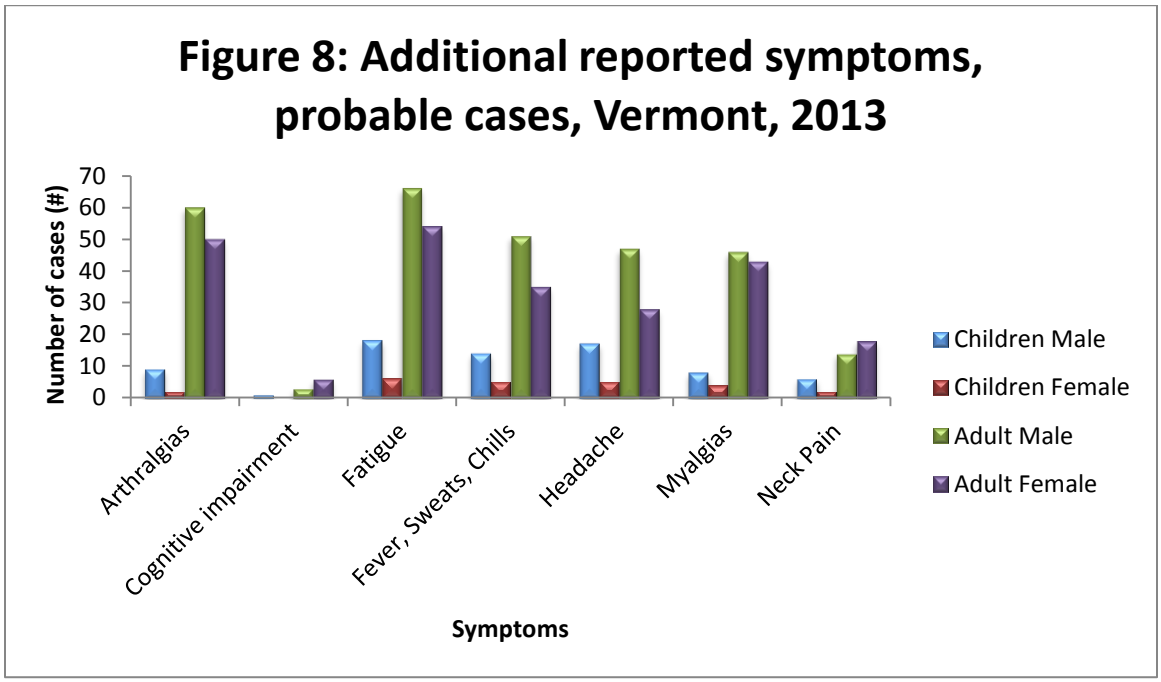
Table 3: Reported major symptoms among adults in confirmed cases, Vermont, 2013

	Symptom		Gender	
Adult	Cases (#)	Cases (%)	Female	Male
EM	401	75.2	188	213
Arthritis	152	28.5	64	88
Bells palsy	45	8.4	22	23
Radiculoneuropathy	15	2.8	6	9
Lymphocytic meningitis	8	1.5	2	6

Additional symptoms are also frequently reported **[Figures 7 and 8]**. These include arthralgias, fatigue, myalgia, and flu-like symptoms such as fever, sweats, chills, headache and neck pain.



The CDC updated the Lyme disease case definition in 2008 to include 'probable' as a possible case status assignment. A 'probable' case is any physician-diagnosed case with clinical symptoms that do not fall into one of the major musculoskeletal, neurologic or cardiac symptom classifications. Symptoms frequently reported include fatigue, joint pain, muscle aches, and fever.



2013 Lyme disease: Number of cases by county, Vermont 2013

Most Lyme disease occurs in residents of the four most southern Vermont counties. Although Chittenden County also has a large number of cases, when adjusted for population size, the four southern counties have the highest incidence rates (number of cases per 100,000 people). **[Table 4]**

Table 4: Incidence Rate of Confirmed and Probable Lyme disease cases, Vermont 2013

County	Number of Confirmed Cases	Incidence Rate: Confirmed Cases	Number of Confirmed and Probable Cases	Incidence Rate: Confirmed and Probable Cases
Addison	40	108.9	57	155.1
Bennington	124	337.9	168	457.8
Caledonia	5	16.1	7	22.5
Chittenden	88	55.5	105	66.2
Essex	1	16.1	1	16.1
Franklin	11	22.8	13	26.9
Grand Isle	5	71.6	8	114.6
Lamoille	5	20	7	28
Orange	28	96.8	34	117.5
Orleans	4	14.8	5	18.4
Rutland	141	231.6	179	294.1
Washington	7	11.7	11	18.5
Windham	80	184.1	113	259.2
Windsor	135	238.4	185	327.3

Conclusion:

Evidence shows that the incidence of Lyme disease continues to be high in Vermont. Reasons for the high number of cases in the Green Mountain State may include: an increase in infected tick populations, better recognition and reporting by health care providers, and habitat and environmental changes**.**

The best way to prevent Lyme disease is to prevent tick bites. It is important to take measures to prevent exposure to ticks, and reduce the risk of contracting Lyme disease.

- Wear light-colored clothing with a tight weave, so you can spot ticks easily.
- Wear enclosed shoes, long pants and long sleeves. Tuck pant legs into boots or socks and shirt into pants.

- Apply insect repellent containing DEET or permethrin, following label instructions carefully.
- Avoid sitting on the ground or stone walls.
- Do a final, full body tick check at the end of the day, looking for what may seem like nothing more than a new freckle or speck of dirt.
- Remove ticks promptly.
- Shower soon after coming inside from tick habitat.

Learn more about preventing tick bites and protecting yourself, your family & pets against Lyme disease by visiting the Vermont Department of Health website- http://www.healthvermont.gov/prevent/lyme/lyme_disease.aspx